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ASSESSMENT OF OPERATIONS AND STRATEGY

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This publication supports Air Force Policy Directive (AFPD) 90-16, *Studies and Analyses, Assessments and Lessons Learned* (to be reissued as AFPD 90-16, *Studies, Analyses, and Assessments*). It provides informational guidance on developing, conducting, and presenting operational assessments and strategy assessments throughout the Air Force (AF). This Air Force Pamphlet (AFPAM) is for reference and is not directive in nature. It applies to individuals at all levels who conduct operational or strategic assessments, including the Air Force Reserve and Air National Guard (ANG), except where noted otherwise. This publication may be supplemented at any level, but all supplements must be routed to the Office of Primary Responsibility (OPR) listed above for coordination prior to certification and approval. Refer recommended changes and questions about this publication to the OPR listed above using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional chain of command. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW the Air Force Records Disposition Schedule (RDS) in the Air Force Records Information Management System (AFRIMS).

Chapter 1

INTRODUCTION TO ASSESSMENT OF OPERATIONS AND STRATEGY

1.1. Overview.

1.1.1. Context. In any operation or process, periodic progress reviews are vital to determine progress toward achieving the desired objectives. Those assessments evaluate progress in creating the effects needed for attainment of the objectives. Evaluations also rate the successful accomplishment of appropriate tasks needed to create those effects. Insights from this review process can support changes to the operation in order to better achieve the desired results or better execute planned actions. The process is accomplished by completing an assessment of operations or strategy. Assessments can be performed at all levels of warfare across a wide array of operations, from warfighting campaigns to headquarters staff activities. When done correctly, an assessment consolidates data from many sources and summarizes the data clearly, concisely, and in context. Assessments provide commanders necessary details of the methods used and results produced. They also communicate relevant uncertainty in the data and the associated risks. Assessments can drive better operational planning and measurement of progress during execution, and provide clear, defensible insights to the operation's commander and planning staff.

1.1.2. Meeting a commander's objectives requires that both planner and assessor select definitive and consistent indicators to objectively show mission progress. Planning and assessment personnel play critical roles in quantifying the duration, scope, and resourcing required to achieve the desired effects and objectives. Just as it is the assessor's job to indicate the degree to which the commander's objectives are being achieved, the planner's role is to build plans in view of the identified success indicators. Neither planner nor assessor should work in a vacuum. Due to close coupling of the planner and the assessor, plans created are readily assessable and thereby support subsequent planning and execution efforts consistent with the overall strategy. That partnership does not imply that the planner and the assessor should be the same person, only that their ongoing collaboration throughout the plan-execute-assess cycle benefits the efficiency of the cycle itself for commanders, operators, planners, and assessors. It is important that assessment focus not get lost in the many responsibilities of the planning cell and also that the assessors are free to provide independent assessment support to the commander regarding the constructed plans themselves.

1.1.3. Goal. The goal of this Air Force Pamphlet (AFPAM) is to describe a widely used and often useful approach to assessing operations and strategy. Additionally, the detailed examples included should provide a starting point from which to tailor other assessments. This AFPAM is not all-encompassing and should not supplant good judgment. Although the approach outlined in this pamphlet is broadly applicable, it may not fit every situation.

1.1.4. Scope. Many diverse types of assessment are performed across military commands. In fact, there are over 30 official Air Force (AF) publications that include the word "assessment" in their titles. This variety of uses gives the term "assessment" a vague meaning. Operational Assessment (OA) can describe assessment as executed within the Strategy Division of the Air Operations Center (AOC). Other operational assessments may

include those in test and evaluation with definitions described in Department of Defense Instruction (DoDI) 5000.02, *Operation of Defense Acquisition System*. Specifically, *this pamphlet describes the assessment of operations and strategy.* It principally applies to assessments of warfighting but is also useful for assessments of staff functions and projects. S*ee case studies in Chapters 3 and 4 for respective examples.*

1.1.4.1. Joint Publication (JP) 5-0, *Joint Operation Planning* provides guidance on not only planning, but also conducting analyses and assessments. This pamphlet is not intended to rewrite the recommended assessment procedures and techniques provided in JP 5-0. It is rather meant to supplement the methods described in JP 5-0 for Air Force assessors. Air Force personnel are encouraged to understand how the methods in this pamphlet complement and apply those presented in JP 5-0, and to consistently apply current guidance for Air Force assessments.

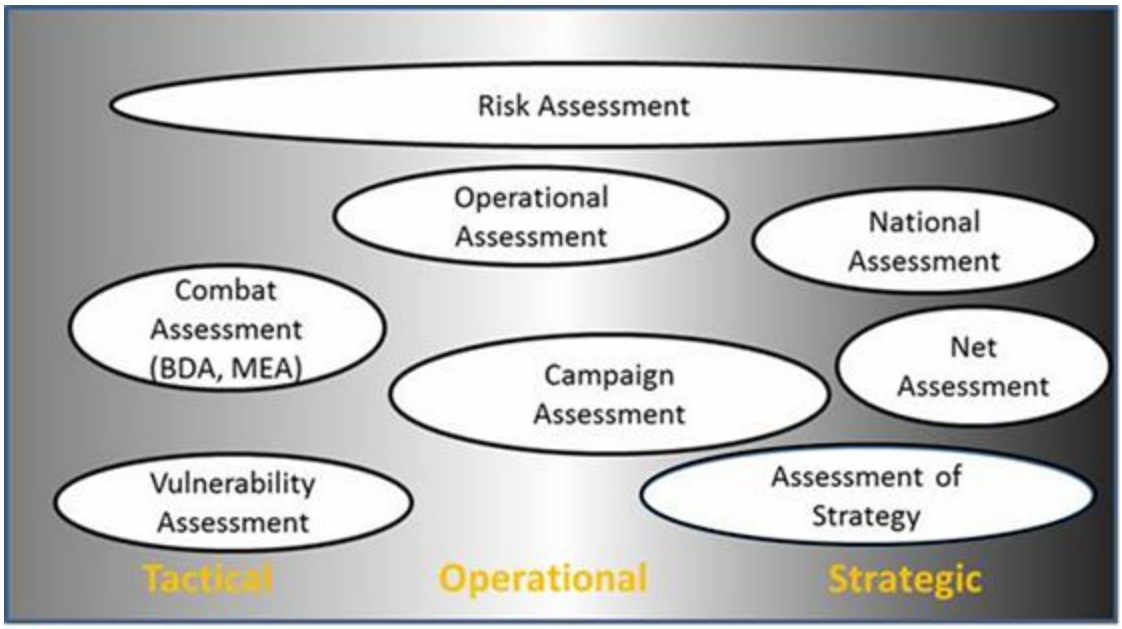
1.1.4.2. This pamphlet also specifically does not address the Air Force Risk Assessment Framework (RAF), though practitioners may find some methods in this pamphlet to be useful in the context of risk assessment. Assessment of risk pervades assessments at all levels and is more effectively described as an independent methodology in its own right. Risk assessment is of tremendous importance to future Air Force and joint actions. If one imagines an operational or strategic plan and its execution as a "window," risk assessment essentially looks at the window before passing through it, whereas operational and strategic assessment discussed in this pamphlet fundamentally evaluate success during and after passing through the window. Risk, and the Air Force Risk Assessment Framework in particular, looks forward to help senior AF leaders make better decisions for potential challenges for the AF, while the methods in this AFPAM inform senior leader decisions by looking at the present and past progress and actions toward planned objectives.

1.1.4.3. This pamphlet does not alter existing responsibilities of Air Force assessors of operations and strategy to take into account the requirements of the Defense Critical Asset Infrastructure Program (DCIP), as defined in DoD Directive (DoDD) 3020.40, *DoD Policy and Responsibilities for Critical Infrastructure*, and account for Joint and Air Force Mission Assurance Assessment requirements and periodicity, as laid out in DoDI 2000.12, *DoD Antiterrorism (AT) Program*, in the Secretary of Defense (SECDEF) 7 May 2012 *Mission Assurance Strategy* memorandum, and in the Oct 2013 *Mission Assurance Strategy Implementation Framework.*

1.2. Levels of Assessment.

1.2.1. The emphasis of this AFPAM is operational and strategic assessments; however, assessments are performed at all levels of warfare (i.e., tactical, operational, and strategic) and across all types of military commands. The focus of an assessment is different at each level and should be determined by the intent of the commander who directed the assessment. Figure 1.1 lists some common types of assessment and the levels where each would most likely be applied.

Figure 1.1. Levels of Assessment.



1.2.2. Tactical Assessments. Assessments in this context are generally performed at the unit or component level and measure task achievement or direct effects of specific tasks performed. Effects are the responses of the operational environment due usually to accomplishment of tasks or actions. Accordingly, time frames associated with tactical assessments tend to be relatively short with more immediate consequences to the actions considered. Combat Assessment – an umbrella term covering Battle Damage Assessment (BDA), non-kinetic Battle Damage Indication (BDI), Munitions Effectiveness Assessment (MEA), and recommendations for re-attack – is primarily an intelligence function executed at the component level to measure first-order tactical effects of military operations. It is a well-developed approach and is described in greater detail in various publications, such as JP 3-60, *Joint Targeting*.

1.2.3. Operational Assessments. Assessments at the operational level begin to evaluate complex indirect effects, track progress toward less immediate objectives, and take a broader perspective of the operational environment. OA frequently account for multiple decisions and actions creating several effects in different domains, all directed toward those specific objectives. Time frames for OA are typically longer, though they can vary widely with the particular objectives, domains, and capabilities involved in an operation. Based on measurements of progress toward intended effects and objectives, OA often are used to make recommendations for adjustments in plans, as well as for changes in resource usage and future action extending beyond re-attack.

1.2.4. Strategic Assessments. Strategic-level assessments can address issues at the service, joint force and national levels and involve a wide array of methodologies, participants, and inputs with broad effects on investment strategy, budget allocation, and strategic requirements. Assessments often consider, as listed in the 2014 Quadrennial Defense Review (QDR), economic, diplomatic, intelligence, law enforcement, development, and military tools for accomplishing strategic objectives. This pamphlet specifically focuses on assessment of Air Force strategy in a joint or coalition environment. Air Force strategy

supports achievement of the objectives listed above by leveraging its core functions, and deserves critical evaluation of its effectiveness. These assessments thereby can evaluate strategy at its appropriate level. Longer time frames are necessary to assess the broad aspects of strategy.

1.2.5. The time frames considered by the various assessments may vary widely, and the relationships among the various assessments are not linear. Outputs from one assessment often feed multiple other assessments. Appropriately scoped to a particular end state, the methodologies presented in Chapter 2 of this pamphlet are likewise applicable at any of the levels of assessment.

Chapter 2

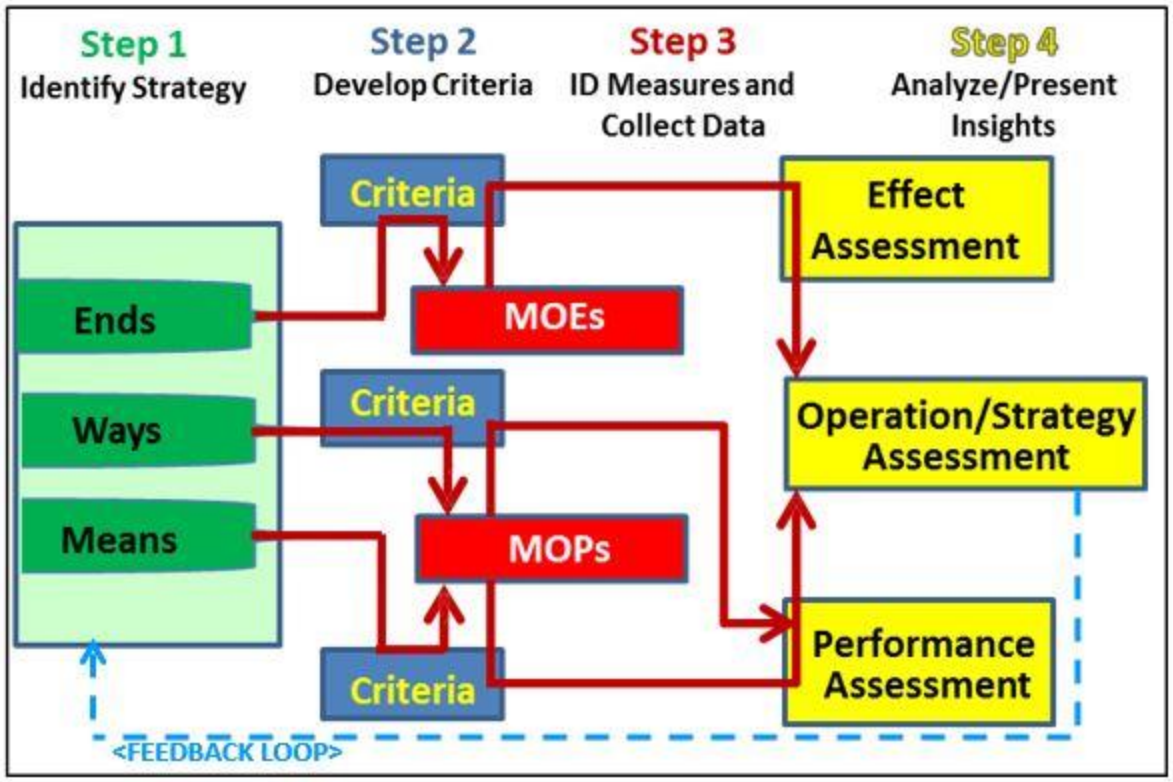
ASSESSMENT OF OPERATIONS AND STRATEGY

2.1. Process Overview.

2.1.1. An assessment of operations and strategy is designed to give a commander and his or her staff insight into whether the commander's operations and strategy are effective and to measure progress of the operations toward that strategy's desired end state. This is done by developing an assessment framework.

2.1.2. The goal of any of these assessments is to develop logically defensible judgments into the effectiveness and conduct of an operation or strategy, to determine areas in need of re-evaluation, and then to support the development of COAs toward the current or updated process. Given the fluid nature of complex military operations involving high-order effects, judgment is an intrinsic part of any assessment. Instead of developing criteria or measures that take all judgment out of the process, the goal is to build an assessment framework for the development of logically defensible judgments. The four steps are: 1) identify strategy, 2) develop criteria, 3) identify measures and collect data, and 4) analyze and present insights. Figure 2.1 depicts the steps for conducting an assessment of operations and strategy, wherein 'MOEs' are measures of effectiveness and 'MOPs' are measures of performance.

Figure 2.1. Steps in the Assessment of Operations and Strategy.



2.1.3. The assessment approach should also account for the cost for the assessment, in relation to the importance of the desired effect or the level of effort of the operation.

2.2. Step 1 – Identify Strategy.

2.2.1. The strategy consists of four components: problem identification/diagnosis and advantages desired upon dealing with the problem or challenge (*ends*), guiding policy to achieve the ends sought, and coherent actions designed to enact guiding policy using appropriate *ways* and *means*. The Ends, Ways, and Means, in particular, are defined in Table 2.1. Developing these components in order to achieve the commander's intent is critical to the success of an assessment. The integration of these elements at an acceptable level of risk constitutes a strategy.

Table 2.1. Definitions of Ends, Ways, and Means.

End State (or Ends) – JP 1-02 defines the end state as "the set of required conditions that defines achievement of the commander's objectives." The end state is generally derived from the commander's intent statement. For other assessments, project planners and managers should consult with assessment experts to help establish reasonable end states for the project. Ideally, assessors will be members of bodies such as operational planning teams.
Ways – The tasks or actions undertaken to help achieve the ends, as generated during the detailed planning process. In a warfighting command, the strategy-to-task process may be a useful start in determining the planned tasks of an operation. For staff assessments, action plans can provide a reasonable starting point for understanding the ways.
Means – The resources put toward accomplishing the ways. The Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities, and Policy (DOTMLPF-P) construct is often a useful methodology for examining and developing the means.

2.2.2. Assessment begins with the assessment team assisting in strategy and planning development to ensure they understand the desired criteria and develop an appropriate assessment approach. Commander's intent, mission statements, and various forms of guidance may be used to develop desired effects. However, care should be taken to ensure effects are not written in terms of planned tasks, but are instead stated as the desired conditions created by successful completion of tasks. Those conditions then sufficiently characterize successful achievement of the desired objective that should result from the tasks.

2.3. Step 2 – Develop Criteria.

2.3.1. Criteria define the attributes and thresholds for judging progress toward the end state itself and the use of resources (means) in the accomplishment of required tasks (ways) taken to achieve those ends. *Development of assessment criteria is the critical component of the assessment process and should be accomplished before specific measures or data requirements are defined*. Developing measures without a clear understanding of how those measures fit into a judgment of the effectiveness of the overall strategy often leads to laborious data collection and analysis processes that provide little value to the decision makers. Spending additional time to thoroughly consider and develop meaningful and

relevant assessment criteria will help to avoid this pitfall. Defining success and failure criteria can be extremely useful in focusing the assessment.

2.3.2. Criteria help focus data collection by ensuring that assessment measures relate clearly to the elements of the operations and strategy being assessed. As data are collected, the criteria translate the data into meaningful insights on the operation or strategy. Criteria should be developed for the ends, ways, and means at each level of the assessment. See Table 2.2 for basic attributes of well-written criteria.

Table 2.2. Attributes of Well-written Criteria.

- *Relevant* to the effect or action being assessed
- *Mutually exclusive* across categories (e.g., Good, Marginal, Poor) for a particular effect or action being assessed
- *Collectively exhaustive* across the range of outcomes for a particular effect or action being assessed
- *Well defined*

Table 2.3 shows examples of criteria that could be used for effects.

Table 2.3. Example Criteria for Effects.

Meeting Combined Force Air Component Commander (CFACC) intent if

Good: Coalition forces (land, sea, and air) conduct all planned attack operations at specified places and times without prohibitive interference from the enemy air forces or Integrated Air Defense System (IADS) and without significant blue attrition

Marginal: Some operations meet prohibitive interference, but overall objective is still likely to be achieved and without significant blue attrition

Poor: Some operations meet prohibitive interference and overall objective is not likely to be achieved or is likely to incur significant blue attrition

Definition – Significant Attrition: Loss of assets which is likely to restrict future operations or reduce current operations

Table 2.4 shows examples of criteria that could be used for performance.

Table 2.4. Example Criteria for Performance.

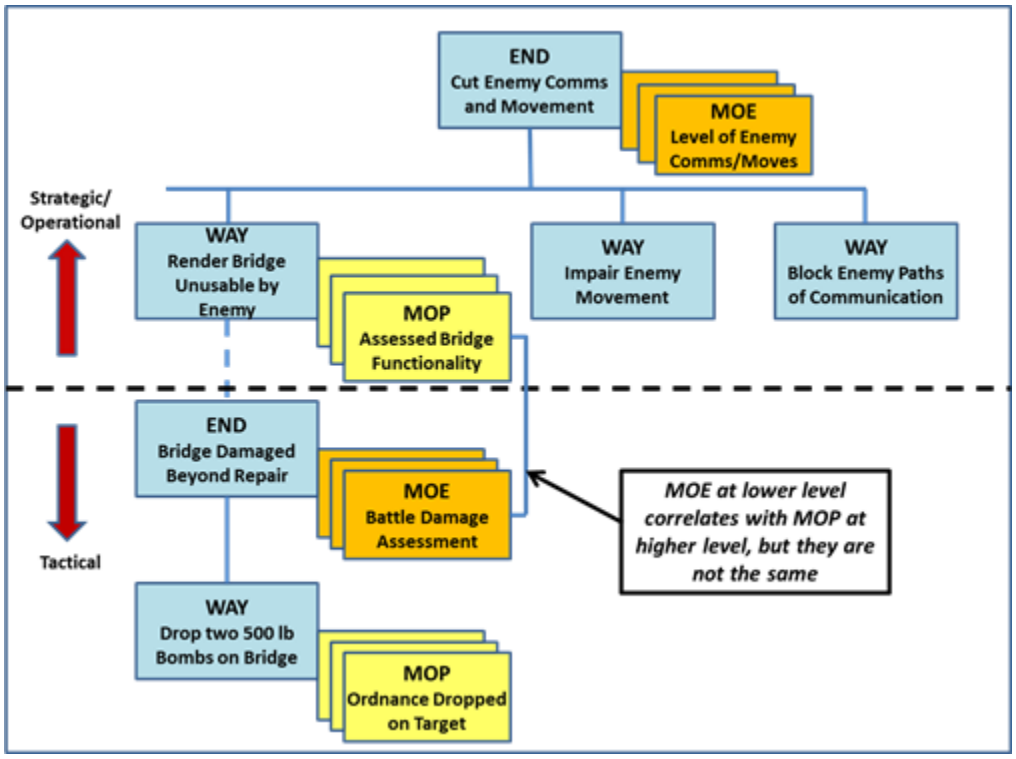
Meeting CFACC intent if **Good:** All planned *operational level missions* were accomplished **Marginal:** Some *operational level missions* were not accomplished but all *critical operational level missions* were accomplished **Poor:** Some *critical operational level missions* were not accomplished **Definitions:** 1. Operational level missions: Objectives above the tactical level, e.g., Combat Air Patrols (CAP), strike missions, escort sorties 2. Critical operational level missions: Objectives that, if not accomplished, lead to unacceptable risk of failure for supported operations

2.4. Step 3 – Identify Measures and Collect Data.

2.4.1. Assessment measures are simply the data elements that, when viewed in relation to the criteria, will provide insights into the effectiveness of the operation or the commander's strategy. Two common types of measures are Measures of Effectiveness (MOEs) and Measures of Performance (MOPs). MOEs are used to assess progress toward the end state, while MOPs address the ways and means that are being executed to help achieve the end state. Simply put, MOEs provide an indication of progress toward achieving desired effects or objectives, while MOPs provide an indication of progress toward accomplishing planned tasks or actions. Developing these measures should be straightforward if the criteria are thorough and meet the basic attributes listed above. If the measures are difficult to develop, the criteria are likely not as mature as they need to be.

2.4.2. The relationship between MOEs and MOPs only exists within the context of the relevant commander's strategy. For example, as shown in Figure 2.2, a measure used as an MOE for the creation of a supporting commander's effect may relate very closely to a supported commander's task required to create a higher echelon effect. Dropping a bridge might represent a task – measured via an MOP – within the operational commander's strategy of cutting enemy lines of communication and preventing enemy movement. At the same time, creating the tactical effect of impeded enemy ability to cross the river would be measured via an MOE for the squadron commander tasked with flying the bombing mission. That relationship does not imply that an MOP at one level is an MOE at another level, only that the measures for one commander's task accomplishment may be closely tied to measures for the creation of another commander's effect. This guidance does not supersede the guidance in AFI 99-103, *Capabilities-Based Test and Evaluation,* on the development of MOEs and MOPs related to the testing processes associated with the development of a materiel solution.

Figure 2.2. Assessment Levels – Example.



2.4.3. Availability of data is an important consideration when developing measures but cannot be assumed. A range of sources – to include the various divisions in a planning or headquarters staff, intelligence reports, and inputs from supported and supporting commands – should be used to gather the required data. Much of this information may be available from relevant Communities of Practice (COPs) or Communities of Interest (COIs), program and enterprise architectures, and other shared resources. These sources may generate a wide array of data in various formats and quality: quantitative and qualitative, objective and subjective, observed and inferred. Assessors should coordinate with owning organizations to determine the quality and quantity of data those organizations can provide prior to the start of the operation. This coordination is crucial to developing useful and measurable assessment criteria.

2.4.4. Developing good measures is an art, though there are some general guidelines that can aid in developing high-quality measures.

2.4.4.1. Measures should represent a scale, not a goal. Assessors may be tempted to write goals or criteria as measures. Instead, goals should be included in the criteria in accordance with (IAW) the commander's risk tolerance and thresholds. Operators and planners should establish these goals in coordination with the assessors. Table 2.5 shows examples of measures that could be used.

Table 2.5. Example Measures – Scale.

Poor: No friendly fighter losses
Better: Number of friendly fighters lost
Poor: No sick people in office
Better: Number of individuals in office diagnosed with H1N1 flu

2.4.4.2. Data satisfying a measure should be observable, or at least inferable. The measurements may be either *quantitative* (numerical) *or qualitative* (non-numerical). In general, objective measures are usually preferred because they reduce uncertainty and variability in the final product. Assessors should avoid blindly using rates, numbers, and other quantitative metrics, especially in assessing effects, since these can often lack a direct linkage to the objectives or ends outlined in the strategy. Table 2.6 shows examples of good and bad measures for both qualitative and quantitative measures.

Table 2.6. Example Measures - Observable/Inferable.

Poor: Civilian populace attitude toward stability forces
Better (Quantitative): Percentage of surveyed civilian population giving "favorable" rating to stability forces
Poor: Progress towards opening new air base
Better (Qualitative): Current phase of air base stand-up (secured land, runway operational, 30-day sustainment capability in place, long-term sustainment capability in place)

2.4.4.3. Measures should be clear and concise. They should be written in plain language so that someone with no prior knowledge of the measures can still understand the data requirements. See Table 2.7 for examples.

Table 2.7. Example Measures – Clear and Concise.

Poor: Status of enemy fighters
Better: Number of enemy fighters confirmed destroyed
Poor: Airfield status
Better: Amount of Petroleum, Oil and Lubricants (POL) available at Base X; Number of active runways; Number of usable shelters; etc

2.4.5. Measures may need to be refined or amended as the operational situation changes. Selection of assessment measures is an iterative, ongoing effort.

2.4.6. All elements of the strategy need to be considered; however, not all the elements need be measured. Attempting to assess too many measures can paralyze the assessment effort. Consider the value to the end result before adding more measures. After assessors have built the entire set of measures, they should conduct a final review to identify those measures that have less relative importance/contribution or take inordinate effort relative to the insight provided, and remove them from the set. Assessment teams should prioritize their efforts to best support the commander's decision making needs. Prioritization of assessment efforts

should also account for the cost in dollars and manpower to collect and conduct the assessment, as compared to the cost of the overall effort being assessed.

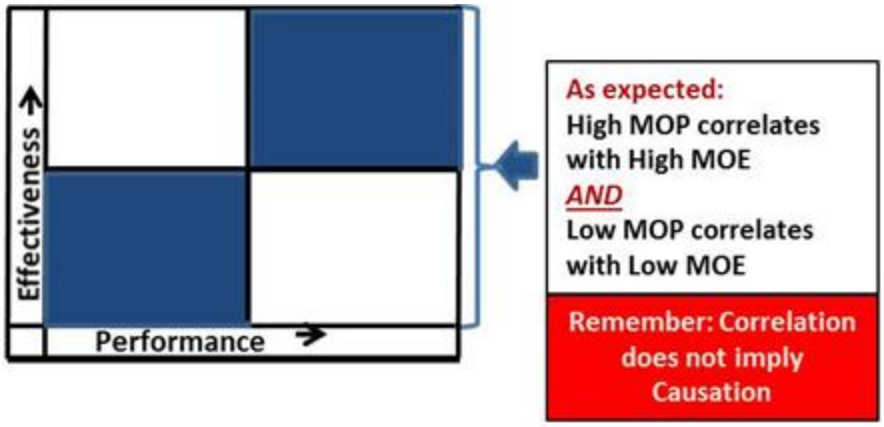
2.5. Step 4 – Analyze and Present Insights.

2.5.1. The purpose of an assessment is not merely to report on the measures, but rather to interpret the realization of the measures and their criteria to provide analytically supported insights into the effectiveness of the operation and strategy. The overall assessment can generally be broken into two major pieces: the effect and performance assessments. The *effect assessment* (based on the MOEs) should provide the commander with the overall picture of progress toward objective or end state achievement or of the creation of effects contributing to those ends. The *performance assessment* (based on MOPs) should provide the commander with an overall picture of how well planned tasks (i.e., the strategy's ways and means) are being executed. Figure 2.3 provides a framework with which to compare evaluations of effects and performance results.

2.5.2. The relationship between the effect assessment and performance assessment can be characterized in two ways: expected results or unexpected results.

2.5.2.1. Expected Results. In the first case, similar effect and performance assessments suggest the operation is succeeding or failing as expected. In other words, the tasks are being performed as planned with the desired effects being achieved, or assessment of poor task performance is correlated with a lack of generation of desired effects. Either one would constitute an expected result. Note that an observed correlation between effect and performance does not necessarily imply causality. Assessors should continue to monitor for any changes to the apparent equilibrium.

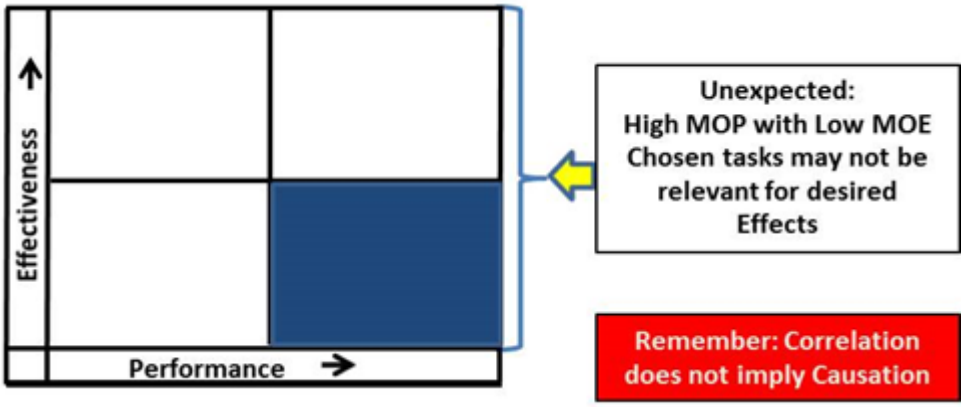
Figure 2.3. Expected Results.



2.5.2.2. Unexpected Results.

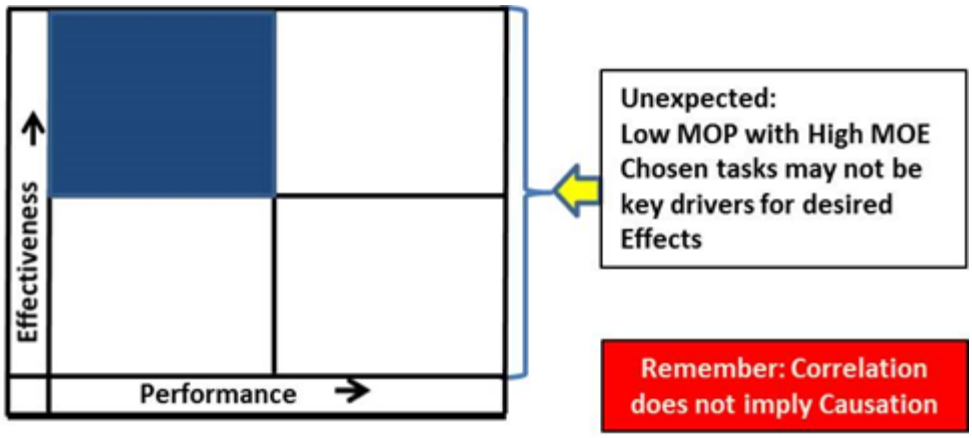
2.5.2.2.1. Disconnects between effect and performance assessments indicate that portions of the plan may require further examination. A high performance value paired with a low effect value, as shown in Figure 2.4, is an indication the completion of planned tasks is not leading to the desired effects. Numerous issues may be driving the result, including data latency, delayed effects, or a misunderstanding of the enemy system. See Table 2.8 for examples.

Figure 2.4. High MOP and Low MOE.



2.5.2.2.2. Conversely, a high value for effect paired with a low value for performance (desired effects are being achieved without the completion of corresponding tasks), as shown in Figure 2.5, indicates there may be a reason to re-evaluate the chosen strategy. Again, numerous issues including data latency, enemy deception, good fortune, and misunderstanding of the enemy system could lead to this apparent contradiction. Table 2.9 provides examples.

Figure 2.5. High MOE with Low MOP.



2.5.2.2.3. The assumptions about the direct links between the achievement of tasks and the effects they support may be flawed. In this situation, the primary focus of an assessment should be to identify and highlight these imbalances to the strategists and planners, so they can recommend changes to the strategy, plan, or operation.

Table 2.8. Examples High Performance/Low Effect.

Example 1: We may have confirmed successful leaflet drops (high performance value) supporting special operations efforts to turn the local population against our enemy, but have had no change in the number of civilian tip-offs on enemy activity in the area (low effect value).
Example 2: We may have BDA indicating the destruction of national power production (high performance value) which was done with the intent of limiting enemy Command and Control (C2), but the adversary's integrated air defense system is still operating in a coordinated and timely fashion, showing no apparent degrade (low effect value).

Table 2.9. Examples Low Performance/High Effect.

Example 1: BDA indicates our strikes on enemy strategic Surface-to-Air Missile (SAM) sites missed their targets (low performance value); however, the adversary has not fired any SAMs during the last five Air Tasking Order (ATO) cycles (high effect value).
Example 2: We have not taken any of our planned actions against enemy fighters (low performance value); however, the adversary is not flying any fighters (high effect value).

2.5.3. Understanding the relationships between effect and performance is critical to interpreting progress in the strategy and to revealing options for planners and commanders to modify their approach accordingly. Identifying these opportunities will allow the commander to execute operations more effectively and efficiently. However, it is also critical to understand why there is an unexpected result, so commanders and planners can most appropriately fine tune the operations or strategy.

2.5.4. The final step is to share with other organizations the results and lessons identified in the assessment: through the Joint Lessons Learned Information System (JLLIS) at **https://www.jllis.mil**, COPs, COIs, enterprise architecture, or the Air Force Operations Assessment Working Group (OAWG), or other means. This critical step helps to ensure lessons identified in the assessments become lessons learned and shared, so they do not become lessons forgotten.

2.5.4.1. While the conceptual results are important to developing overall insights into the effectiveness of the strategy being assessed, those insights can be lost if they are not presented in a succinct, easy-to-understand form for the commander. Many presentation options exist, from showing the current state of the assessment to including trending information that shows progress over the course of the operation. The specific form for displaying these results can vary widely based on the specific operation and the preference of the commander.

2.5.4.2. For reference, attachment 2 of this AFPAM is a concise, single page summary of the steps to assessment of operations and strategy.

Chapter 3

CASE STUDY – AIR SUPERIORITY

3.1. Overview. This example is an assessment of air superiority in a generic scenario. It is not specific to any theater or Operation Plan (OPLAN); specific OPLANs would require their own assessment criteria and list of key tasks and objectives based on the details of those plans. This example only considers one small portion of the overall effort that the assessment team would have to undertake in providing support to all elements of the commander's strategy. Despite the example's specificity for air superiority, the concepts and processes discussed can be applied to any assessment and provide a concrete starting point for an analyst tasked with providing an assessment of operations and strategy. Assessments are never completely straightforward with a single correct solution. The best approach is the one that best provides logically supported, relevant, and timely feedback to the commander.

3.2. Step 1 – Identify the Strategy.

3.2.1. For a given theater of operations, one of the commander's objectives might be to gain and maintain air superiority. Given this objective, planners would develop ways and means, and consult with assessment experts to determine reasonable end states.

3.2.2. Definition. The assessment should use accepted doctrinal definitions to the greatest extent possible. Thus, this example uses JP 1-02's definition of air superiority as "That degree of dominance in the air battle by one force that permits the conduct of operations at a given time and place without prohibitive interference from air and missile threats."

3.2.3. Scope.

3.2.3.1. When scoping the assessment, keep in mind that efforts are typically constrained by many outside influences such as regulations, standards, and laws. A major driver for many assessments is the limiting factors of existing equipment, software, processes, and available data. Other influences may include security or safety concerns. Thus, identifying and managing the scope of any assessment is an important step early in the process.

3.2.3.2. For this example, the Joint Force Air Component Commander (JFACC) is the commander who is supported by the assessment. The JFACC's responsibilities include gaining and maintaining air superiority in order to enable Joint Force Commander's (JFC) objectives. Note from the definition above that air superiority enables other operations. Therefore, the assessment should consider the operations it enables. This could include air, land, and sea operations and would require consultation with supported commanders. While theater ballistic missile defense is sometimes included under air superiority, it is not considered in this example.

3.2.4. Statement of Strategy. Once applicable definitions are clear and the assessment is scoped to the appropriate level, assessors should work with the JFACC and other staff elements to develop the end state, ways and means that will be assessed. *This is an iterative process, working to converge on a reasonably assessable end state, ways, and means.* The strategy laid out below is clearly much simpler than it would be in a real scenario, where the ways and means should specify the specific tasks (e.g., numbers and types of missions flown)

and the resources tied to those tasks (e.g., aircraft, support forces). While an important aspect of strategy, the means, are not used in this example. Delving into means is crucial for conducting root cause analysis, but not necessarily needed here to interpret the effects versus performance described in subsequent steps.

3.2.4.1. End State. All friendly air, land, and sea operations are free from prohibitive interference by opposing Integrated Air Defense Systems (IADS), and/or opposing air, space, and cyber capabilities.

3.2.4.2. Ways. Offensive Counterair/Defensive Counterair, Suppression of Enemy Air Defenses, and Intelligence, Surveillance, and Reconnaissance (ISR) missions.

3.3. Step 2 – Develop Criteria.

3.3.1. Based on the strategy developed in step 1, criteria should next be developed to specify the attributes and standards that must be observed in order to determine criteria categories. The number of categories, their titles (e.g., good, acceptable, marginal, or poor) and how they are presented (e.g., stoplight chart, slider bars) all depend on the specific operation being assessed and the preferences of the commander.

3.3.2. The end state criteria should directly address the end state: whether enemy air has had prohibitive interference on friendly operations. Possible criteria are shown in Table 3.1.

Table 3.1. Potential End State Criteria.

Good: Coalition forces (land, air, sea) conducted all planned attack operations at specified places and times during previous four ATO cycles without prohibitive interference from/in the air while incurring no friendly attrition from/in the air.
Acceptable: All operations completed with no prohibitive interference in/from the air in prior four ATO cycles but friendly attrition is sustained from/in the air. <include scale of acceptable region for assessment purposes>
Marginal: Some operations not completed due to prohibitive interference from/in the air during previous four ATO cycles, but no friendly attrition is sustained from/in the air. <include scale of marginal region for assessment purposes>
Poor: Some operations are not completed due to prohibitive interference from/in the air and friendly attrition is sustained from/in the air. <include scale of poor region for assessment purposes>

3.3.2.1. Any nonstandard or confusing terms should be fully defined in order to ensure consistent application of the criteria. For example, the term “significant friendly attrition” should be defined relative to the JFACC’s risk tolerance and to attrition’s impact on sustaining planned operations per the plan being executed.

3.3.2.2. Similarly, criteria for the ways (i.e., tasks taken to achieve air superiority) should take form similar to the examples shown in Table 3.2.

Table 3.2. Potential Ways (Task) Criteria.

Good: All planned operational level air superiority missions were accomplished during previous four ATO cycles.
Marginal: One or more operational level air superiority missions were not accomplished during previous four ATO cycles, but all critical operational level air superiority missions were accomplished. <include scale of area between good and bad for assessment purposes>
Poor: One or more critical operational level air superiority missions were not accomplished during previous four ATO cycles. <include scale of poor region for assessment purposes>

3.3.3. Many outcomes could potentially result from any operation, and it may be difficult to capture all of these outcomes within the criteria categories. For example, many air superiority tasks may exist making it difficult to partition their levels of accomplishment into a few clear categories. A useful way to partition the space of potential outcomes within the criteria statements is to break the tasks into broad categories. In the example above, these categories were operational level missions and critical operational level missions. This partition allows the assessors, through consultation with planners and Subject Matter Experts (SMEs), to group missions into these broad categories. Be aware, however, that too many categories can produce overly complex assessment results that are difficult to understand, while too few categories might oversimplify.

3.4. Step 3 – Identify Measures and Collect Data.

3.4.1. The next step in the assessment process is to develop measures and collect data to fulfill those measures. Metric development should flow easily from well-developed criteria. MOEs are those measures necessary to assess progress toward the end state criteria, while MOPs measure task performance based on the ways and means of the strategy.

3.4.2. MOEs.

3.4.2.1. Based on the end state criteria outlined above, Table 3.3 could be a potential list of MOEs for the assessment.

3.4.2.2. Notice that these measures would require consultation with the supported commanders whose missions (air, land, and sea) are enabled by air superiority. It is important to ensure these commands provide adequate supporting details with their feedback, so that the air commander and planning staff can make concrete strategy adjustments if necessary.

3.4.2.3. MOEs 2, 3, and 4 in Table 3.3 need to be interpreted by air, land and naval SMEs who can translate the raw numbers into useful information on what certain levels of attrition mean to their operations and objectives.

Table 3.3. List of Potential MOEs.

MOE 1: % of friendly missions failing due to enemy IADS
MOE 2: Friendly aircraft attrition due to enemy IADS
MOE 3: Friendly land attrition due to enemy IADS
MOE 4: Friendly naval attrition due to enemy IADS

3.4.3. MOPs.

3.4.3.1. The ways/means criteria suggest the MOPs listed in Table 3.4 to judge how well the assigned tasks are accomplished.

Table 3.4. List of Potential MOPs.

MOP 1: % of known enemy IADS sites destroyed
MOP 2: Number of strikes on enemy IADS sites

3.4.3.2. Like the MOEs above, the MOP values reported need to be interpreted by SMEs to yield actionable feedback to the JFACC.

3.5. Step 4 – Analyze and Present Insights.

3.5.1. Analysis. Analysis can take many forms within the assessment, ranging from statistical analysis of quantitative data to gathering questionnaire data to compiling SME inputs. The type of analysis used will depend on a number of factors, including the type of data being analyzed and how much time is allowed for the assessment process (an 80% solution in time to inform a commander's decision is better than a 100% solution after the decision has already been made).

3.5.1.1. For example, MOEs 2 and 3 involve SME judgment from the supported commands; thus, complex statistical analysis would not be appropriate. Simply reporting the SME judgment with supporting details might be the appropriate level of analysis. However, for MOEs 1 and 4, more intricate analysis on the percentages and their trends might be in order. *In the end, analysis should serve, rather than drive, the assessment process.*

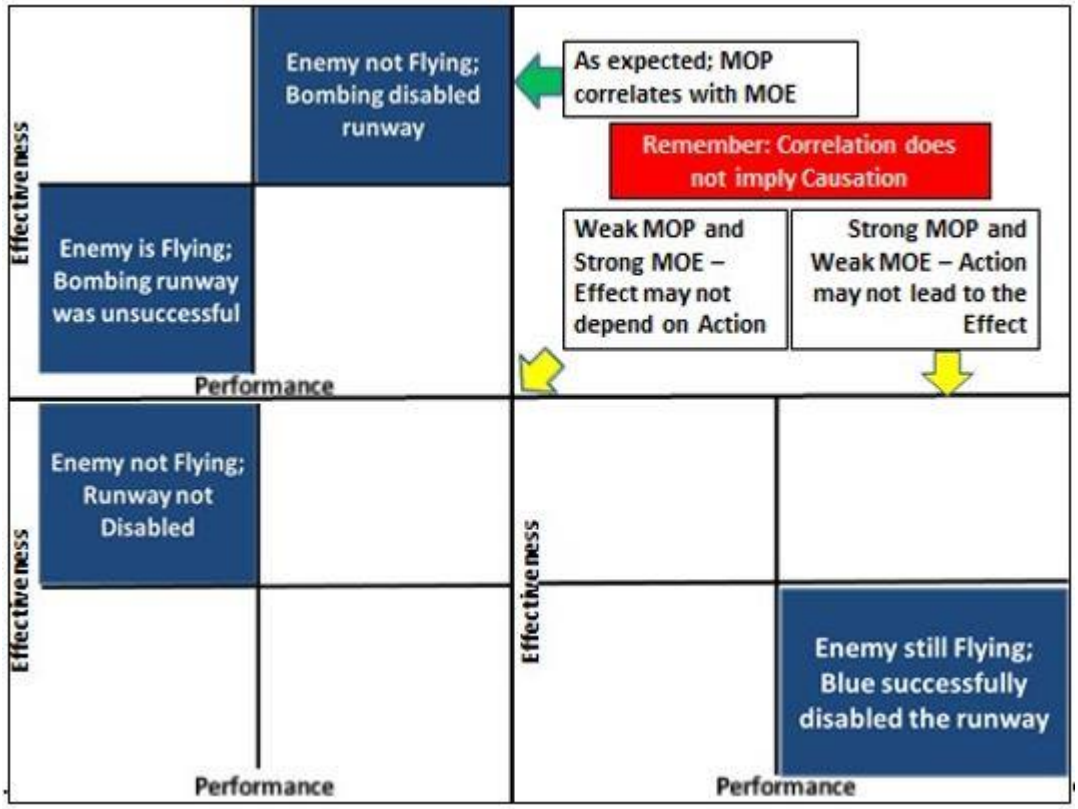
3.5.2. Conceptual Results. Assessors, in consultation with planners, strategists, and SMEs, should use their analysis to develop the conceptual results of the assessment in order to provide useful insights to the commander on the effectiveness of the strategy.

3.5.2.1. As described in **Chapter 2**, comparing the effect assessment (via the MOEs) and the performance assessment (via the MOPs) can yield various insights into the strategy being assessed. Figure 3.1 displays these insights for one portion of the air superiority objective: offensive strike missions on enemy airfields to limit enemy sortie generation. The desired effect is that the enemy aircraft are not able to fly; the task is to destroy the enemy runways.

3.5.2.2. These four basic results can be used to provide insights to the effectiveness of the strategy and progress toward accomplishment of JFACC objectives. Note that while Figure 3.1 shows four distinct quadrants, the outcomes will most likely not be as clear-

cut. Sharing the assessment conclusions with various elements of the planning staff is vital to providing a useful judgment of strategy success to the commander and to influencing potential subsequent changes to planned COAs.

Figure 3.1. Interpretation of Enemy Sortie Generation.



3.5.3. Assessment Results Presentation and Lessons Learned Dissemination.

3.5.3.1. Process observations through the lessons learned process IAW AFI 90-1601, *Air Force Lessons Learned Program,* and CJCSI 3150.25F, *Joint Lessons Learned Program*, AFI 10-1301, *Air Force Doctrine Development,* and within the OAWG.

3.5.3.2. Share lessons identified in the assessment with the broader joint community by uploading all lessons identified into the JLLIS website at **https://www.jllis.mil**.

Chapter 4

CASE STUDY – UNIT FITNESS

4.1. Overview. This example is an assessment of an Air Force unit's overall fitness level. This is an oversimplified example of how to apply the methodology described above, but the concepts and processes discussed can be applied to any assessment and provides a concrete starting point for an analyst tasked with providing an assessment of operations and strategy. As with any assessment, the best approach is the one that best provides logically supported, relevant, and timely feedback to the commander.

4.2. Step 1 – Identify the Strategy. All unit commanders are concerned with ensuring personnel are mission ready. Since part of being mission ready requires a minimum fitness level, unit commanders typically have a goal of 100% of personnel achieving a passing score on their (bi)annual fitness evaluation. Given this objective, unit fitness monitors would develop ways and means, and consult with assessment experts to determine measures that would indicate progress.

4.2.1. Definition. In order to assess unit fitness, there has to be an acceptable definition of physical fitness. Physical fitness generally refers to a person's ability to be healthy, resist diseases, work effectively, and respond to emergency situations. The Air Force's objective is to ensure members are physically prepared to meet expeditionary mission requirements. For this assessment, we will consider members fit if they are able to earn a composite score of 75 or greater and meet the minimum component scores as identified in AFI 36-2905, *Fitness Program*.

4.2.2. Scope. For this example, the scope of the assessment is constrained to the personnel within the fitness monitor's unit. The commander being supported by the assessment is the fitness monitor's unit commander, whose responsibilities include maintaining readiness.

4.2.3. Statement of Strategy. Once applicable definitions are clear and the assessment is scoped to the appropriate level, assessors (unit fitness monitor in this case) should work with the unit commander to develop the end state, ways and means that will be assessed. *This is an iterative process, working to converge on a reasonably assessable end state, ways and means.* Possible ends, ways, and means for this strategy are listed in Table 4.1.

Table 4.1. Possible Ends, Ways, Means of the Strategy.

End State: 100% of personnel pass the Air Force Fitness test in FY##
Ways: Fitness Program with periodic practice tests and periodic practice sessions for unit personnel, led by fitness monitor
Means: Exercise equipment, exercise facilities, exercise attire

4.3. Step 2 – Develop Criteria.

4.3.1. Based on the strategy developed in step 1, criteria should next be developed to specify the attributes and standards that must be observed in order to produce certain categories.

4.3.2. The end state criteria should directly address the end state: whether 100% of unit personnel pass the test or not. Table 4.2 lists potential end state criteria.

Table 4.2. Potential End State Criteria.

Good: Everybody pass the (bi)annual/practice tests
Marginal: Some personnel fail (bi)annual test, but unit improves compared to last year
Poor: Unit test pass rate does not improve or gets worse

4.3.3. Any nonstandard or confusing terms should be fully defined in order to ensure consistent application of the criteria. For example, "unit improvement" could be better defined as a specific percentage increase in the unit's passing rate. The commander and unit fitness monitor would have to decide how much of an increase indicates the unit is truly improving.

4.3.4. Similarly, criteria for the ways (or the tasks taken to achieve a 100% passing rate) should also be developed as exemplified in Table 4.3.

Table 4.3. Potential Ways (Tasks) Criteria.

Good: High participation in fitness program, and test administered to all
Acceptable: High program participation, with Moderate shortfall in test administration
Marginal: Moderate shortfall in program participation with no worse than Moderate shortfall in test administration
Poor: Significant shortfall in fitness program participation or in testing

4.3.5. As above, "high participation" should be defined. For example: High Participation means all members who have failed bi-annual fitness test participate at least 90% of time and other members participate at least 75% of the time.

4.4. Step 3 – Identify Measures and Collect Data.

4.4.1. The next step in the assessment process is to develop measures and collect data to fulfill those measures. Metric development should flow easily from well-developed criteria. MOEs are those measures necessary to assess progress toward the end state criteria, while MOPs measure task performance based on the ways and means of the strategy.

4.4.2. Measures of Effectiveness.

4.4.2.1. Based on the end state criteria outlined above, Table 4.4 is a potential list of MOEs for the assessment.

Table 4.4. Potential MOEs.

MOE 1: (Bi)annual official test pass rate
MOE 2: Monthly practice test pass rate

4.4.3. Measures of Performance.

4.4.3.1. The ways/means criteria suggest the MOPs shown in Table 4.5.

Table 4.5. Potential MOPs.

MOP 1: Unit percentage practice session participation
MOP 2: Individual monthly practice test performance
MOP 3: Percent of unit tested monthly

4.4.3.2. Like the MOEs above, the MOP percentages reported need to be interpreted by SMEs to yield actionable feedback to the commander.

4.4.4. The data collection task should not overwhelm the assessment effort. Spending time understanding the strategy, developing criteria and identifying MOEs/MOPs should focus the collection on only the data truly necessary to produce useful assessment results.

4.5. Step 4 – Analyze and Present Insights.

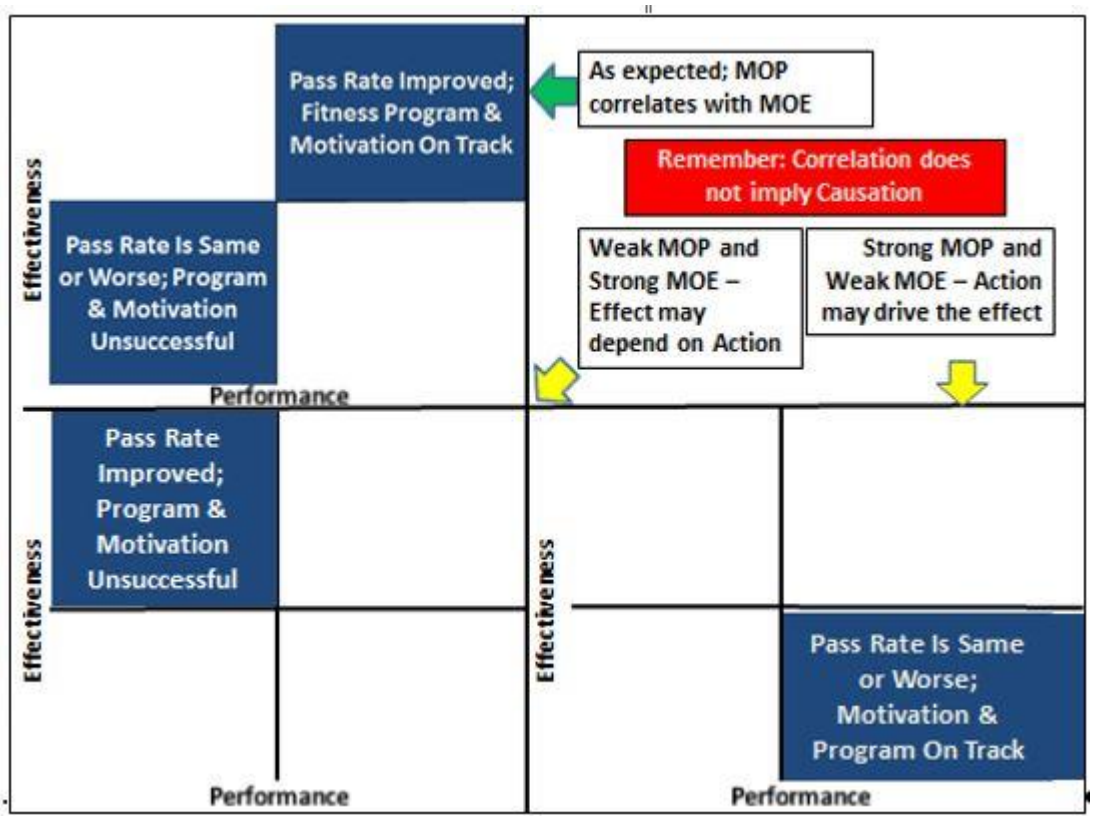
4.5.1. Analysis. The approach to analysis within an assessment will vary according to the particular requirements of the assessment. Analytic techniques useful in assessments include, among others, statistical analysis of quantitative data, gathering questionnaire data, and compiling SME inputs. The type of analysis used will depend on a number of factors including the type of data being analyzed and the amount of time available to conduct the assessment (an 80% solution in time to inform a commander's decision is better than a 100% solution after the decision has already been made). For example, MOE 2 can provide useful insights into the unit's fitness, however, at the end of the year the only test that matters is the official test result for each individual. *In the end, analysis should serve, not drive, the assessment*.

4.5.2. Conceptual Results. Assessors, in consultation with the unit commander and the fitness monitor, should use their analysis to develop the conceptual results of the assessment in order to provide useful insights to the commander on the effectiveness of the strategy.

4.5.2.1. As described in **Chapter 2**, comparing the effect assessment (via the MOEs) and the performance assessment (via the MOPs) can yield various insights into the strategy being assessed. Figure 4.1 displays these insights for looking at the effect the commander desires (100% fitness test pass rate) against the tasks performed (unit fitness program).

4.5.2.2. These four basic results can be used to provide insights to the commander on the effectiveness of the strategy and progress toward accomplishment of objectives. Note that while Figure 4.1 shows four distinct quadrants, the outcomes will most likely not be as clear-cut. Results may have to be vetted through various SMEs in order to better understand the assessment results.

Figure 4.1. Unit Fitness Program Assessment.



4.5.3. Assessment Results Presentation and Lessons Learned Dissemination.

4.5.3.1. Process observations through the lessons learned process IAW AFI 90- 1601, *Air Force Lessons Learned Program,* CJCSI 3150.25F, *Joint Lessons Learned Program*, AFI 10-1301, *Air Force Doctrine Development,* and within the OAWG.

4.5.3.2. Share lessons identified in the assessment with the broader joint community by uploading all lessons identified into the JLLIS website at **https://www.jllis.mil**.

Chapter 5

SUMMARY

5.1. Overview. Whether working in the AOC, Task Force, NAF, MAJCOM, or HAF, an analyst needs to have an assessment strategy to support the respective commander. While every situation is unique, the basic approach described in this pamphlet provides a useful structure for accomplishing these assessments. The process focuses on understanding the underlying strategy and developing the criteria that support critical elements of the strategy. From there, developing metrics is straightforward. Determining the conceptual results of the assessment will require judgment and interpretation from various staff divisions and SMEs, while displaying the results will depend on the particulars of the operation being assessed and on the preferences of the commander. These four basic steps to the assessment of operations and strategy are summarized below.

5.2. Step 1 – Identify the Strategy. Assessments should flow from a keen understanding of the commander's intent. Developing end states, ways, and means to achieve the commander's intent at an acceptable risk level is critical to the success of an assessment.

5.3. Step 2 – Develop Criteria. Criteria define the attributes and thresholds for judging progress toward the end state and accomplishment of required tasks. They help ensure that only relevant and necessary data are collected and that consistent and logical feedback is provided to the commander.

5.4. Step 3 – Identify Measures and Collect Data. Assessment measures – including MOEs and MOPs are drafted as part of operational design and planning, and should relate directly to the criteria they are supporting. Data for assessments exist throughout the operational environment, and collection requires the concerted efforts of those responsible for a given level of assessment, along with other agencies, governments, and partners. COPs, COIs, program and enterprise architectures, and other shared resources have a wealth of information.

5.5. Step 4 – Analyze and Present Insights. Analysts should look critically at the data emerging from data collection. Well-defined assessment criteria and measures should ensure relevant data are being collected. Analysts should continually evaluate the usefulness of the collected data to the assessment. Based on analyses, strategists and planners may make recommendations ranging from a simple re-attack on a task to the major re-direction of a campaign. Successful adaptation requires constant review of assessment criteria, analyses, and recommendations for future action to commanders at all levels.

5.6. The key to success in today's conflicts, and in the future, lies in the ability to adapt – to find a means of gaining continuing advantage. Assessments can help guide this adaptation by providing meaningful feedback to commanders at all levels on the effectiveness of their operations and strategy.

KEVIN E. WILLIAMS, SES, DAF
Director, Studies, Analyses and Assessments

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

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AFPD 90-16, *Air Force Studies and Analyses, Assessments and Lessons Learned*, 31 August 2011

Air Force Operations Assessment Working Group Charter, 11 October 2011

Prescribed Forms

None

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

AF (or USAF)—United States Air Force

AF/A9—Headquarters Air Force Studies, Analyses, and Assessments directorate

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFPAM—Air Force Pamphlet

AFPD—Air Force Policy Directive

AFRIMS—Air Force Records Information Management System

AF/CC (or CSAF)—Air Force Chief of Staff

AF/CV (or VCSAF)—Air Force Vice Chief of Staff

AOC—Air Operations Center

ATO—Air Tasking Order

BDA—Battle Damage Assessment (kinetic assessment)

BDI—Battle Damage Indication (non-kinetic assessment)

CAP—Combat Air Patrol

CFACC—Combined Force Air Component Commander

CJCS—Chairman of the Joint Chiefs of Staff

CJCSI—CJCS Instruction

COA—Course of Action

COI—Community of Interest

CONOPS—Concept of Operations

COP—Community of Practice

C2—Command and Control

DAF—Department of the Air Force

DoD—Department of Defense

DoDD—DoD Directive

DoDI—DoD Instruction

DOTMLPF-P—Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities, and Policy

DTIC—Defense Technical Information Center

FY—Fiscal Year

HAF—Headquarters Air Force

IADS—Integrated Air Defense System

IAW—In Accordance With

ISR—Intelligence, Surveillance and Reconnaissance

JFACC—Joint Force Air Component Commander

JFACC—Joint Force Air Component Commander

JFC—Joint Force Commander

JLLIS—Joint Lessons Learned Information System

JP—Joint Publication

MAJCOM—Major Command

MEA—Munitions Effectiveness Assessment

MOE—Measure of Effectiveness

MOP—Measure of Performance

NAF—Numbered Air Force

OA—Operational Assessment

OAT—Operational Assessment Team

OAWG—Operations Assessment Working Group

OPLAN—Operational Plan

OPR—Office of Primary Responsibility

POL—Petroleum, Oil and Lubricants

QDR—Quadrennial Defense Review

RAF—Risk Assessment Framework

RDS—Records Disposition Schedule

SAM—Surface-to-Air Missile

SECDEF—Secretary of Defense

SES—Senior Executive Service

SITREP—Situation Update Report

SME—Subject Matter Expert

US—United States

Terms

Assessment—According to JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*, an assessment is a continuous process that measures the overall effectiveness of employing joint force capabilities during military operations. This includes assessments performed at the AOC, Task Force, and Numbered Air Force (NAF) levels. As stated in JP 5-0, *Joint Planning*, an assessment is "an operational activity that supports decision making by determining progress toward accomplishing a task, creating an effect, or achieving an objective or end state for the purpose of making operations and campaigns more effective," which can include those that take place at Major Command (MAJCOM) and Headquarters Air Force (HAF) levels as well. Works in this latter category, while similar to assessments of military operations, are focused instead on staff functions or activities supporting operations and strategy.

Assessment of operations and strategy—An assessment of any operation or higher-level process for which there is an operation and an underlying strategy.

Assessor—An individual whose key responsibility is to conduct an assessment.

Commander—In this pamphlet only, the commander supported by an assessment, whether a warfighting commander, a headquarters staff directorate lead, or any principal stakeholder for the assessment.

Criteria—Standards of judgment or evaluation used as a basis for assessment or testing; also defined thresholds of measures indicating a level of success or progress.

Effects—The changes (intended or not) in the operational environment created by contributing actions.

End State (or Ends)—JP 1-02 defines the end state as "the set of required conditions that defines achievement of the commander's objectives." The end state is generally derived from the commander's intent statement. For other assessments, project planners and managers should consult with assessment experts to help establish reasonable end states for the project. Ideally, assessors will be members of bodies such as operational planning teams.

Means—The resources put toward accomplishing the *ways* to achieve the desired *end state*. The Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities, and Policy (DOTMLPF-P) construct is often a useful methodology for examining and developing the means.

Measures—Characteristics, dimensions, or ratings used in an assessment to quantify or qualify task performance, effectiveness, or progress toward success criteria for an objective.

Objectives—Operational and strategic results sought by a commander. Objectives are characterized by a set of effects that are created in part by a set of prescribed actions and operations.

Planner—An individual who translates the commander's strategic guidance into a feasible Course of Action (COA) and Concept of Operations (CONOPS), by which the organization can achieve its assigned mission and military end state.

Ways—The tasks or actions undertaken to help achieve the ends, as generated during the detailed planning process. In a warfighting command, the strategy-to-task process may be a useful start in determining the planned tasks of an operation. For staff assessments, action plans can provide a reasonable starting point for understanding the ways.

Attachment 2

REFERENCE SHEET STEPS TO ASSESSMENT OF OPERATIONS & STRATEGY

A2.1. Step 1 – Identify the Strategy. Developing the appropriate end states, ways, and means required to achieve the commander's intent at an acceptable risk level is critical to the success of an assessment.

Define required conditions (ENDS) for achievement of the commander's objectives.
Detail the tasks or actions (WAYS) that must be taken to help achieve the ENDS.
Determine the resources (MEANS) needed to accomplish the WAYS.

A2.2. Step 2 – Develop Criteria. Define attribute and threshold criteria for assessing progress toward the end state and accomplishing required tasks. Generate criteria that are:

Relevant to the effect or action being assessed.
Mutually exclusive across the range of outcomes of the particular effect or action being assessed.
Collectively exhaustive across the range of outcomes of the particular effect or action being assessed.
Well-defined.

A2.3. Step 3 – Identify Measures and Collect Data. Determine useful assessment measures including Measures of Effectiveness (MOEs) and Measures of Performance (MOPs) that relate directly to the criteria they are supporting.

Ensure measures to be collected are appropriate, useful, and acceptable to stakeholders for a given level of assessment.
Construct measures that represent a scale, not a goal.
Strive for measures that can be assessed with observable (or at least inferable) data.
Ensure measures are clear and concise.

A2.4. Step 4 – Analyze and Present Insights. Present results and insights, and make recommendations to decision makers to support their decision processes. Continually and critically evaluate the usefulness of the collected data to the assessment.

Derive assessment insights.
Critically examine data and assumptions.
Investigate the causes underlying assessment results.
Seek feedback from experts and decision makers, and incorporate their insights into the assessment.